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**Supplemental Site Investigation Report**

**Johns Manville Manufacturing Facility  
1871 North Pershing Road  
Waukegan, Illinois 60087**

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Prepared for  
W. D. Clinton  
Manager of Engineering  
Johns Manville  
10100 West Ute Avenue  
Littleton, Colorado 80127

Prepared by  
LFR Levine-Fricke  
630 Tollgate Road  
Suite D  
Elgin, Illinois 60123

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## EXECUTIVE SUMMARY

LFR Levine·Fricke (LFR) conducted an investigation to address additional subsurface investigation activities requested by the Illinois Environmental Protection Agency (IEPA) at the former building/manufacturing area of the Johns Manville (JM) property located at 1871 North Pershing Road, Waukegan, Illinois (Figure 1, Property Location Map). The work was conducted as outlined in the Supplemental Site Investigation Work Plan (Work Plan) dated December 16, 2004.

The former building/manufacturing area (the "Site") is located on (roughly) the western half of the JM property (see Figure 2, General Property Map and SRP Remediation Site). The Site was enrolled into the Illinois Site Remediation Program (SRP) on April 18, 2002.

The following areas were investigated during the investigation:

- REC 2: 1989 UST Excavation 2 and REC 16: Building E Kerosene Pits
- REC 5: 1989 UST Excavation 5
- REC 12: Solvent Recovery Room
- Building A Pits
- UMW-16 Water quality
- Water level gauging for LNAPL

With the exception of the detection of copper and lead in the Building A Pits area, all results were consistent with previous investigations, as reported in the Revised Comprehensive Site Investigation Report dated June 9, 2004. Copper and lead in the Building A Pit area exceed the Residential Ingestion standard found in 35 Illinois Administrative Code Part 742 and will be addressed in the Remediation Objectives Report and Remedial Action Plan.

## 1.0 INTRODUCTION

### 1.1 Site Description

The approximately 353-acre Johns Manville (JM) facility (“the Property”) is located along the shoreline of Lake Michigan primarily in the City of Waukegan, Lake County, Illinois (see Figure 1, Property Location Map). It is bounded on the west by the Union Pacific Railroad, on the south by Greenwood Avenue, Midwest Energy, Commonwealth Edison, and City of Waukegan property, on the east by Lake Michigan, and on the north by Illinois Beach State Park.

For discussion purposes, the Property may be divided into five general areas: Building (roughly 109 acres), Disposal (142 acres), Borrow (roughly 50 acres), Beach (roughly 23 acres) and Canal (roughly 29 acres). Figure 2 (General Property Map) depicts these and other major features.

An initial Comprehensive Site Investigation Report (CSIR) (Revision 0) was submitted to the Illinois Environmental Protection Agency (IEPA) on October 17, 2002. The IEPA subsequently provided comments to the report in a letter dated January 27, 2002. In response to both those comments and subsequent meetings, a Site Investigation Work Plan was developed and submitted to the IEPA for approval, which was subsequently granted in a letter from the IEPA dated October 27, 2003. The additional data was collected and reported in a Revised CSIR (Revision 1) dated June 9, 2004.

The IEPA subsequently provided comments to the report in a letter dated October 12, 2004. In response to both those comments and subsequent meetings, a Site Investigation Work Plan was developed and submitted to the IEPA for approval, which was subsequently granted in a letter from the IEPA dated December 20, 2004. The additional data was collected and is reported in this Supplemental Site Investigation Report (SIR). Where appropriate, reference may be made and the reader directed to information previously submitted in the Revised CSIR (Revision 1).

### 1.3 Report Organization

This Amended CSIR has been developed to address soil and groundwater quality within the Building Area. The principal report elements are:

- Section 2.0: Subsurface Investigation Activities
- Section 3.0: Subsurface Investigation Results
- Section 4.0: Summary and Conclusion

## 2.0 SUBSURFACE INVESTIGATION ACTIVITIES

### 2.1 Soil Boring Installation

Soil borings were conducted on January 4, 2005 using a direct push soil probe equipped with a 4-foot long macrotube sampler. At each location, an initial soil boring was advanced to a minimum depth of 12 feet below ground surface (bgs) and soil samples were screened in 2 foot intervals using a photoionization detector (PID). The 2-foot soil sample interval from each boring exhibiting the highest PID reading from field screening was identified as the target depth interval for collection of the soil sample slated for laboratory analysis from a “twin” boring advanced within 2 feet of the initial soil boring. The “twin” soil boring was advanced using a direct push soil probe to the target depth interval identified in the initial soil boring and a soil sample was collected from the target depth. Sample screening and collection procedures are outlined in the Work Plan.

#### 2.1.1 REC 2 – UST Excavation 2 and REC 16 – Building E Pits

Two soil borings were installed at locations within the combined RECs 2 and 16. Borings 05-01A and 05-02A were located within the area identified as having elevated TPH concentrations. Twin borings were installed within 2 feet of the initial soil boring for sample collection; these borings were labeled 05-01B and 05-02B. The soil samples were submitted to First Environmental Laboratory (First), an Illinois accredited laboratory, for analysis of volatile organic compounds (VOCs) via Method 8260/5035 and total petroleum hydrocarbons (TPH) via Method 8015.

All field observations and measurements are presented on the boring logs, which are included in Appendix A. Figure 3 depicts the soil boring locations.

#### 2.1.2 REC 5 – UST Excavation 5

Two soil borings were installed at locations within REC 5. Borings 05-03A and 05-04A were located within the area identified as having elevated TPH concentrations. Twin borings were installed within 2 feet of the initial soil boring for sample collection; these borings were labeled 05-03B and 05-04B. The soil samples were submitted to First for analysis of VOCs via Method 8260/5035 and TPH via Method 8015.

All field observations and measurements are presented on the boring logs, which are included in Appendix A. Figure 4 depicts the soil boring locations.

#### 2.1.3 REC 12 – Solvent Recovery Room

Four soil borings were installed at locations within REC 12. Borings 05-05A, 05-06A, 05-07A and 05-12A were located within the area surrounding the former solvent

recovery room. Twin borings were installed within 2 feet of the initial soil boring for sample collection; these borings were labeled 05-06B, 05-07B and 05-12B. Due to the low PID readings in boring 05-05A (5.6 ppm or less), a twin soil boring was not advanced and soil samples were not collected at this location. Borings 05-12A and 05-12B were installed directly east of the solvent recovery area to replace boring 05-05A.

The soil samples were submitted to First for analysis of VOCs via Method 8260/5035 and TPH via Method 8015. All field observations and measurements are presented on the boring logs, which are included in Appendix A. Figure 5 depicts the soil boring locations.

#### **2.1.4 Building A Pits**

Four soil borings were installed at locations within the Building A Pits area, located on the western side of Former Building A. Borings 05-08A, 05-09A, 05-10A and 05-11A were located in the general area of the former Building A pits. Due to the low PID readings in all of the borings (1.2 ppm or less), soil samples were collected only from the twin boring 05-10B, which had a layer of what appeared to be fill material with a slight odor.

The soil sample from boring 05-10B was submitted to First for analysis of VOCs via Method 8260/5035, semivolatile organic compounds (SVOCs) via Method 8270, TPH via Method 8015, polychlorinated biphenyls (PCBs) and inorganics via the 6000/7000 Series Methods as listed in Appendix A (Table D) of 35 IAC Part 740.

All field observations and measurements are presented on the boring logs, which are included in Appendix A. Figure 6 depicts the soil boring locations.

### **2.2 Water Sample Collection**

On January 6, 2005, one water sample was collected from UMW-16 for analysis of VOCs in accordance with the procedures in Section 7.5 of the Work Plan. The monitoring well sampling form is included in Appendix B.

### **2.3 Monitoring Well and Piezometer Gauging**

On November 8, 2004 each Site monitoring well and piezometer was monitored for the presence of light non-aqueous phase liquids (LNAPL) using an oil-water interface probe in accordance with the procedures in Section 7.4 of the Work Plan.

## 3.0 SUBSURFACE INVESTIGATION RESULTS

### 3.1 REC 2 – UST Excavation 2 and REC 16 – Building E Pits

The 8 to 10 foot interval in boring 05-01A had the highest PID reading (157 parts per million by volume [ppmv]) and was selected as the target sample interval in the twin boring 05-01B. The soil from that interval in the 05-01B boring had a PID reading of 233 ppmv. The 6 to 8 foot interval and the 8 to 10 foot interval in boring 05-02A had the highest PID readings (68.7 and 51.1 ppmv, respectively); therefore, the 7 to 9 foot interval was selected as the target sample interval in the twin boring 05-02B. The soil from that interval in the 05-02B boring had a PID reading of 81.6 ppmv.

Tables 1 and 2 contain the soil sample results for the REC 2/16 borings. All samples were analyzed for TPH and VOCs. Table 1 shows that the total TPH detected in 05-01B was 9,670 milligrams per kilogram (mg/kg) and the total TPH result for 05-02B was 5,300 mg/kg.

As Table 2 shows, no VOCs were detected above their respective detection limits in sample 05-01B. Ethylbenzene and total xylenes were detected in the 05-02B boring at 0.76 and 2.88 mg/kg, respectively. The detection limits in both soil samples were elevated due to the presence of TPH (discussed above).

Figure 3 shows the location of the sampling locations within REC 2/16. Copies of the laboratory reports are included in Appendix C.

### 3.2 REC 5 – UST Excavation 5

The 4 to 6 foot interval and the 6 to 8 foot interval in boring 05-03A had the highest PID readings (1089 and 866 ppmv, respectively); therefore, the 5 to 7 foot interval was selected as the target sample interval in the twin boring 05-03B. The soil from that interval in the 05-03B boring had a PID reading of 1246 ppmv. The 4 to 5 foot interval in boring 05-04A had significant petroleum odor and was selected as the target sample interval in the twin boring 05-04B. The soil from that interval in the 05-04B boring had a PID reading of 1189 ppmv.

Tables 1 and 2 contain the soil sample results for the REC 5 borings. All samples were analyzed for TPH and VOCs. Table 1 shows that the total TPH detected in 05-03B was less than 250 mg/kg and the total TPH result for 05-02B was less than 250 mg/kg.

As Table 2 shows, no VOCs were detected above their respective detection limits in sample 05-03B. Ethylbenzene was detected in the 05-04B boring at 0.223 mg/kg. The detection limits in both soil samples were elevated.

Figure 4 shows the location of the sampling locations within REC 5. Copies of the laboratory reports are included in Appendix C.

### 3.3 REC 12: Solvent Recovery Room

The 6 to 8 foot interval and the 8 to 10 foot interval in boring 05-06A had the highest PID readings (2073 and 889 ppmv, respectively); therefore, the 7 to 9 foot interval was selected as the target sample interval in the twin boring 05-06B. The soil from that interval in the 05-06B boring had a PID reading of 2511 ppmv. The 8 to 10 foot interval in boring 05-07A had the highest PID reading (2511 ppmv) and was selected as the target sample interval in the twin boring 05-07B. The soil from that interval in the 05-07B boring had a PID reading of 3484 ppmv. The 6 to 8 foot interval in boring 05-12A had the highest PID reading (1391 ppmv) and was selected as the target sample interval in the twin boring 05-12B. The soil from that interval in the 05-12B boring had a PID reading of 2052 ppmv.

Tables 1 and 2 contain the soil sample results for the REC 12 borings. All samples were analyzed for TPH and VOCs. Table 1 shows that the total TPH detected in 05-06B was 293 mg/kg; the total TPH result for 05-07B was less than 10 ppm and the total TPH result for 05-12B was 2,280 mg/kg.

As Table 2 shows, the following VOCs were detected in boring 05-06B; ethylbenzene at 3.14 mg/kg, toluene at 0.0109 mg/kg and total xylenes at 2.4 mg/kg. No VOCs were detected above their respective detection limits in sample 05-07B. The following VOCs were detected in boring 05-12B; benzene at 0.0447 mg/kg, ethylbenzene at 0.0824 mg/kg, toluene at 0.0499 mg/kg and total xylenes at 0.502 mg/kg.

Figure 5 shows the location of the sampling locations within REC 12. Copies of the laboratory reports are included in Appendix C.

### 3.4 Building A Pits

Four soil borings were installed at locations within the Building A Pits REC. Borings 05-08A, 05-09A, 05-10A and 05-11A were located in the general area of the former Building A pits. None of the 4 borings installed in the Building A Pit area detected PID readings above 1.2 ppmv. A soil sample was collected only from the twin boring 05-10B, which had a layer of what appeared to be fill material with a slight odor in the 7 to 8 foot interval.

Tables 1 through 5 contain the soil sample results for the Building A borings. The sample from 05-10B (7-8) was analyzed for VOCs, SVOCs, TPH, PCBs and inorganics.

As Table 1 shows, TPH was detected in 05-10 B at 1,250 mg/kg.

As Table 2 shows, toluene was the only VOC detected at 0.0068 mg/kg.

As Table 3 shows, no SVOCs were detected above their method detection limits.

As Table 4 shows, several metals were detected. Only copper and lead were detected above remediation objectives at 3,550 mg/kg and 592 mg/kg, respectively. These values exceed the residential exposure route for ingestion which are 2,900 mg/kg and 400 mg/kg, respectively.

As Table 5 shows, no PCBs were detected above their method detection limits.

Figure 6 shows the location of the sampling locations within the Building A Pit area. Copies of the laboratory reports are included in Appendix C.

### **3.5 Water Sample Collection**

The results for the water sample collected from UMW-16 are summarized in Table 6. No VOCs were detected above their method detection limits. The monitoring well sampling form is included in Appendix B. Copies of the laboratory reports are included in Appendix C.

### **3.6 Monitoring Well and Piezometer Gauging**

None of the monitoring wells or piezometers had a detection of LNAPL with the exception of piezometer 03-P1 in REC 2/16. This piezometer had 0.27 inches of LNAPL. This result is not inconsistent with the elevated TPH previously reported in REC 2/16.

Table 7 contains all water level information collected from monitoring wells or piezometers for the November 8, 2004 gauging event. Figure 7 displays a groundwater elevation map for that event.

## 4.0 SUMMARY AND CONCLUSION

The results of the subsurface soil sampling showed that the following sample results exceeded remediation objectives:

- REC 2/16: TPH was detected in samples 05-01B (8-10') and 05-02B (7-9') at 9,670 and 5,300 mg/kg, respectively. This result is consistent with prior investigations and, as previously indicated in the Revised CSIR, will be addressed in the ROR/RAP.
- REC 12: Benzene was detected in 05-12B (4-6') at 0.0447 mg/kg, which exceeds the soil component of class I groundwater ingestion (0.03 mg/kg). TPH was detected in the same sample at 2,280 mg/kg. This elevated VOCs result is consistent with prior investigations in this area of REC 12 and, as previously indicated in the Revised CSIR, will be addressed in the ROR/RAP.
- Building A Pits: Copper and lead were detected at 3,550 mg/kg and 592 mg/kg, respectively. These values exceed the residential exposure route for ingestion, which are 2,900 mg/kg and 400 mg/kg, respectively, and will be addressed in the ROR/RAP.

In addition, the following conditions were noted:

- No VOCs were detected above method detection limits in the water sample collected from UMW-16. This result is consistent with previous data collected from this monitoring well.
- LNAPL was detected in a piezometer in REC 2/16 at a thickness of 0.27 inches. This result is not inconsistent with the elevated TPH data previously reported in REC 2/16 and will be addressed in the ROR/RAP.

These results are considered supplemental to, and are incorporated as part of, the Revised CSIR dated June 9, 2004. No additional investigation of the Site is proposed. The ROR/RAP will be prepared to address the conditions reported on Table 20 in the Revised CSIR and the elevated metals detected in the Building A Pit area.

No further investigative activities are proposed for the Site.

# TABLES

## **Tables**

**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**January 4, 2005**  
**TPH via SW846 Method 8015B**  
**Johns Manville - Former Manufacturing Area**

All concentrations are reported in milligram per kilogram (mg/kg)

Compound	Sample Number and Depth (feet)							
	REC 2/16		REC 5		REC 12			Bldg. A Pits
	05-01B (8-10)	05-02B (7-9)	05-03B (5-7)	05-04B (4-5)	05-06B (7-9)	05-07B (8-10)	05-12B (4-6)	05-10B (7-8)
TPH Gasoline	< 150	< 150	< 250	< 250	176	< 10	1,450	< 10
TPH Diesel	<b>9,670</b>	<b>3,000</b>	< 250	< 250	< 15	< 10	< 10	< 10
TPH Oil	< 150	<b>2,300</b>	< 250	< 250	117	< 10	826	1,250
TPH Total	<b>9,670</b>	<b>5,300</b>	< 250	< 250	293	< 10	<b>2,280</b>	1,250
Field PID reading*	233	81.6	1246	1189	2511	3484	2052	1.2

"<" symbol indicates the compound was not detected above the displayed method detection limit.

\* Field screening of sampled material using PID (ppm)

**TABLE 2**  
**SOIL SAMPLE ANALYTICAL RESULTS**

January 4, 2005  
**Volatile Organic Compounds via SW846 Method 5035A/8260B**  
 Johns Manville - Former Manufacturing Area

All concentrations are reported in milligram per kilogram (mg/kg)

Compound	Sample Number and Depth (feet)						Remediation Property			Soil Component of Groundwater Ingestion	
	REC 2/16		REC 5		REC 12		Bldg. A Pits		Residential Property		Class I
	05-01B (8-10)	05-02B (7-9)	05-03B (5-7)	05-04B (4-5)	05-06B (7-9)	05-07B (8-10)	05-12B (4-6)	05-10B (7-8)	Ingestion	Inhalation	
Acetone	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	7,800	100,000	16
Benzene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	<b>0.0447</b>	< 0.005	12	0.8	0.03
Bromo-chloromethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	10	3,000	0.6
Bromoform	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	81	53	0.8
Bromo-methane (Methyl bromide)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	110	10	0.2
2-Butanone (Methyl ethyl ketone)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	47,000*	25,000*	17*
Carbon Disulfide	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	7,800	720	32
Carbon Tetrachloride	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	5	0.3	0.07
Chlorobenzene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	1,600	130	1
Chloro-dibromomethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	1,600	1,300	0.4
Chloroethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	31,000*	15,000*	15*
Chloroform	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	100	0.3	0.6
Chloro-methane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	310*	110*	0.14*
1,1-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	7,800	1,300	23
1,2-Dichloroethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	7	0.4	0.02
1,1-Dichloroethene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	700	1,500	0.06
cis-1,2-Dichloroethene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	780	1,200	0.4
trans-1,2-Dichloroethene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	1,600	3,100	0.7
1,2-Dichloropropane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	9	15	0.03
cis-1,3-Dichloropropene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	6.4	1.1	0.004
trans-1,3-Dichloropropene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	6.4	1.1	0.004
Ethylbenzene	< 0.1	0.76	< 0.1	0.223	3.14	< 0.1	0.0824	< 0.005	7,800	400	13
2-Hexanone	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	31,000*	70*	1.3*
4-Methyl-2-Pentanone (MIBK)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	---	3,100*	---
Methylene Chloride	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	85	13	0.02
MTBE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	780	8,800	0.32
Sterene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	16,000	1,500	4
1,1,2,2-Tetrachloroethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	4,700*	2,000*	3.3*
Tetrachloroethene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	12	11	0.06
Toluene	< 0.1	< 0.1	< 0.1	< 0.1	0.0109	< 0.1	0.0499	0.0068	16,000	650	12
1,1,1-Trichloroethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	---	1,200	2
1,1,2-Trichloroethane	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	310	1,800	0.02
Trichloroethene	< 0.1	< 0.1	< 0.1	< 0.1	< 0.005	< 0.1	< 0.005	< 0.005	58	5	0.06
Vinyl Acetate	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	78,000	1,000	170
Vinyl Chloride	< 0.1	< 0.1	< 0.1	< 0.1	< 0.01	< 0.1	< 0.01	< 0.01	0.46	0.28	0.01
Xylenes, Total	< 0.1	2.88	< 0.1	< 0.1	2.4	< 0.1	0.502	< 0.005	160,000	320	150

Remediation objectives are in accordance with the State of Illinois Tiered Approach to Corrective Action Objectives (35 Illinois Administrative Code, Part 742).

"<" symbol indicates the compound was not detected above the displayed method detection limit.

"---" symbol indicates a remediation objective has not been specified for this exposure route.

\* Chemicals not in TACO Tier 1 Tables

a Provisional remediation objective

**TABLE 3**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
January 4, 2005  
Volatile Organic Compounds via SW846 Method 5035A/8260B  
Johns Manville - Former Manufacturing Area

All concentrations are reported in milligram per kilogram (mg/kg)

Compound	Sample Number and Depth (feet) Bldg. A Pits	Remediation Objectives		
		Residential Property		Soil Component of Groundwater Ingestion
	05-10B (7-8)	Ingestion	Inhalation	Class I
Acenaphthene	< 0.33	4,700	---	570
Acenaphthylene	< 0.33	2,300 <sup>a</sup>	--- <sup>a</sup>	24 <sup>a</sup>
Anthracene	< 0.33	23,000	---	12,000
Benzidine	< 0.33	0.003*	0.009*	0.0000043*
Benzo(a)anthracene	< 0.33	0.9	---	2
Benzo(b)fluoranthene	< 0.33	0.9	---	5
Benzo(k)fluoranthene	< 0.33	9	---	49
Benzo(g,h,i)perylene	< 0.33	2,300 <sup>a</sup>	--- <sup>a</sup>	32,000 <sup>a</sup>
Benzo(a)pyrene	< 0.09	0.09	---	8
Benzic Acid	< 0.33	310,000	---	400
Benzyl alcohol	< 0.33	23,000*	6,900*	9.4*
Bis (2-Chloroethoxy) methane	< 0.33	---	---	---
Bis (2-Chloroethyl) ether	< 0.33	0.6	0.2	0.0004
Bis (2-Chloroisopropyl) ether	< 0.33	3,100*	1,300*	2.4*
Bis (2-ethylhexyl) phthalate	< 0.33	46	31,000	3,600
4-Bromophenyl-phenylether	< 0.33	---	---	---
Butylbenzylphthalate	< 0.33	16,000	930	930
Carbazole	< 0.33	32	---	0.6
4-Chloroaniline	< 0.33	310	---	0.7
4-Chloro-3-methylphenol	< 0.33	---	---	---
2-Chloronaphthalene (beta-Chloronaphthalene)	< 0.33	6,300*	---*	240*
2-Chlorophenol	< 0.33	390	53,000	4
4-Chlorophenyl phenyl ether	< 0.33	---	---	---
Chrysene	< 0.33	88	---	160
Dibenz(a,h)anthracene	< 0.09	0.09	---	2
Dibenzofuran	< 0.33	310 <sup>a</sup>	--- <sup>a</sup>	15 <sup>a</sup>
1,2-Dichlorobenzene	< 0.33	7,000	560	17
1,3-Dichlorobenzene	< 0.33	70 <sup>a</sup>	570 <sup>a</sup>	0.2 <sup>a</sup>
1,4-Dichlorobenzene	< 0.33	---	11,000	2
3,3-Dichlorobenzidine	< 0.66	1	---	0.007
2,4-Dichlorophenol	< 0.33	230	---	1
Diethylphthalate	< 0.33	63,000	2,000	470
2,4-Dimethylphenol	< 0.33	1,600	---	9
Dimethylphthalate	< 0.33	780,000 <sup>a</sup>	1,300 <sup>a</sup>	380 <sup>a</sup>
Di-n-butylphthalate	< 0.33	---	---	---
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	< 1.6	27 <sup>a</sup>	--- <sup>a</sup>	--- <sup>a</sup>
2,4-Dinitrophenol	< 1.6	160	---	0.2
2,4-Dinitrotoluene	< 0.25	0.9	---	0.0008
2,6-Dinitrotoluene	< 0.26	0.9	---	0.0007
Di-n-octylphthalate	< 0.33	1,600	10,000	10,000
Fluoranthene	< 0.33	3,100	---	4,300
Fluorene	< 0.33	3,100	---	560
Hexachlorobenzene	< 0.33	0.4	1	2
Hexachlorobutadiene	< 0.33	16*	1000*	2.9*
Hexachlorocyclopentadiene	< 0.33	550	10	400
Hexachloroethane	< 0.33	78	---	0.5
Indeno(1,2,3-cd)pyrene	< 0.33	0.9	---	14
Isothorone	< 0.33	15,600	4,600	8
2-Methylnaphthalene	< 0.33	310 <sup>a</sup>	--- <sup>a</sup>	7.7 <sup>a</sup>
2-Methylphenol	< 0.33	3,900	---	15
3&4-Methylphenol	< 0.33	3,900 <sup>a</sup> /390 <sup>a</sup>	15,000 <sup>a</sup> --- <sup>a</sup> *	2.7*/0.24*
Naphthalene	< 0.33	1,600	170	12
2-Nitroaniline	< 1.6	---	73 <sup>a</sup>	---
3-Nitroaniline	< 1.6	---	---	---
4-Nitroaniline	< 1.6	---	---	---
Nitrobenzene	< 0.26	39	92	0.1
2-Nitrophenol	< 1.6	---	---	---
4-Nitrophenol	< 1.6	---	---	---
N-Nitrosodimethylamine	< 0.33	---	---	---
N-Nitrosodi-n-propylamine	< 0.33	0.09	---	0.00005
m-Nitrosodiphenylamine	< 0.33	130	---	1
Pentachlorophenol	< 0.33	3	---	0.03
Phenanthrene	< 0.33	2,300 <sup>a</sup>	--- <sup>a</sup>	220 <sup>a</sup>
Phenol	< 0.33	47,000	---	100
Pyrene	< 0.33	2,300	---	4,200
1,2,4-Trichlorobenzene	< 0.33	780	3,200	5
2,4,5-Trichlorophenol	< 0.66	7,800	---	270
2,4,6-Trichlorophenol	< 0.33	58	200	0.2

Remediation objectives are in accordance with the State of Illinois Tiered Approach to Corrective Action Objectives (35 Illinois Administrative Code, Part 742).

"<" symbol indicates the compound was not detected above the displayed method detection limit.

"---" symbol indicates a remediation objective has not been specified for this exposure route.

\* Chemicals not in TACO Tier 1 Tables

\* Remediation Objectives are shown for 3-Methylphenol/4-Methylphenol

\* Provisional remediation objective

**TABLE 4**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**January 4, 2005**  
**Target Analyte List Inorganics (total) via SW846 Method 3050B/6010B\***  
**Johns Manville - Former Manufacturing Area**

All concentrations are reported in milligram per kilogram (mg/kg) unless otherwise noted

Compound	Sample Number and Depth (feet)	Remediation Objectives		Metropolitan Background
		Residential Property		
	Bldg. A Pits	05-10B (7-8)	Ingestion	Inhalation
Cyanide	< 0.10	1,600	---	0.51
Aluminum	4,220	78,000 <sup>a</sup>	--- <sup>a</sup>	9,500
Antimony	2.8	31	---	4.0
Arsenic	8.3	13	---	13.0
Barium	39.3	5,500	690,000	110
Beryllium	0.9	160	1,300	0.59
Cadmium	0.5	78	1,800	0.6
Calcium	10,700	---	---	9,300
Chromium	10	230	270	16.2
Cobalt	4.4	4,700	---	8.9
Copper	3,550	2,900	---	19.6
Iron	10,700	---	---	15,900
Lead	592	400	---	36
Magnesium	4,880	325,000 <sup>b</sup>	--- <sup>b</sup>	4,820
Manganese	70.8	3,700	69,000	636
Mercury	< 0.05	23	10	0.06
Nickel	8.6	1,600	13,000	18.0
Potassium	314	---	---	1,268
Selenium	< 0.2	390	---	0.48
Silver	1.2	390	---	0.55
Sodium	173	---	---	130
Thallium	< 1.0	6.3	---	0.32
Vanadium	25.3	550	---	25.2
Zinc	196	23,000	---	95

Remediation objectives are in accordance with the State of Illinois Tiered Approach to Corrective Action Objectives (35 Illinois Administrative Code, Part 742).

"<" symbol indicates the compound was not detected above the displayed method detection limit.

"---" symbol indicates a remediation objective has not been specified for this exposure route.

\* Cyanide via Method 9010B/9014 and Mercury via Method 7470A

<sup>a</sup> Provisional remediation objective

<sup>b</sup> From 3/4/02 IEPA Memo "Remediation Objectives for Essential Nutrients"

**TABLE 5**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**January 4, 2005**  
**Polychlorinated Biphenyls (PCBs) via SW846 Method 3540C/8082**  
**Johns Manville - Former Manufacturing Area**

All concentrations are reported in milligram per kilogram (mg/kg)

Compound	Sample Number and Depth (feet)	Remediation Objectives		Soil Component of Groundwater Ingestion
		Residential Property		
	Bldg. A Pits 05-10B (7-8)	Ingestion	Inhalation	
Aroclor 1016	< 0.08	1	---	---
Aroclor 1221	< 0.08	1	---	---
Aroclor 1232	< 0.08	1	---	---
Aroclor 1242	< 0.08	1	---	---
Aroclor 1248	< 0.08	1	---	---
Aroclor 1254	< 0.16	1	---	---
Aroclor 1260	< 0.16	1	---	---

Remediation objectives are in accordance with the State of Illinois Tiered Approach to Corrective Action Objectives (35 Illinois Administrative Code, Part 742).

"<" symbol indicates the compound was not detected above the displayed method detection limit.

"---" symbol indicates a remediation objective has not been specified for this exposure route.

**TABLE 6**  
**WATER SAMPLE ANALYTICAL RESULTS**  
**January 6, 2005**  
**Volatile Organic Compounds via SW846 Method 8260B**  
**Johns Manville - Former Manufacturing Area**

All concentrations are reported in milligrams per liter (mg/L)

Compound	Sample Number	Class I Groundwater Remediation Objective
	UMW-16	
Acetone	< 0.01	0.7
Benzene	< 0.005	0.005
Bromodichloromethane	< 0.001	0.0002
Bromoform	< 0.001	0.001
Bromomethane (Methyl bromide)	< 0.005	0.0098
2-Butanone (Methyl ethyl ketone)	< 0.01	4.2
Carbon Disulfide	< 0.005	0.7
Carbon Tetrachloride	< 0.005	0.005
Chlorobenzene	< 0.005	0.1
Chlorodibromomethane	< 0.001	0.14
Chloroethane	< 0.01	2.8*
Chloroform	< 0.001	0.0002
Chloromethane	< 0.01	0.028*
1,1-Dichloroethane	< 0.005	0.7
1,2-Dichloroethane	< 0.005	0.005
1,1-Dichloroethene	< 0.005	0.007
cis-1,2-Dichloroethene	< 0.005	0.07
trans-1,2-Dichloroethene	< 0.005	0.1
1,2-Dichloropropane	< 0.005	0.005
cis-1,3-Dichloropropene	< 0.001	0.001
trans-1,3-Dichloropropene	< 0.001	0.001
Ethylbenzene	< 0.005	0.7
2-Hexanone	< 0.01	0.28*
4-Methyl-2-Pentanone (MIBK)	< 0.01	0.56*
Methylene Chloride	< 0.005	0.005
MTBE	< 0.005	0.07
Styrene	< 0.005	0.1
1,1,2,2-Tetrachloroethane	< 0.005	0.42*
Tetrachloroethene	< 0.005	0.005
Toluene	< 0.005	1
1,1,1-Trichloroethane	< 0.005	0.2
1,1,2-Trichloroethane	< 0.005	0.005
Trichloroethene	< 0.005	0.005
Vinyl Acetate	< 0.01	7.0
Vinyl Chloride	< 0.002	0.002
Xylenes, Total	< 0.005	10

Remediation objectives are in accordance with the State of Illinois Tiered Approach to Corrective Action Objectives (35 Illinois Administrative Code, Part 742).

"<" symbol indicates the compound was not detected above the displayed method detection limit.

"--" symbol indicates a remediation objective has not been specified for this exposure route.

\* Chemicals not in TACO Tier I Tables

**TABLE 7**  
**WATER LEVEL GAUGING RESULTS**  
**November 8, 2004**

Johns Manville - Former Manufacturing Area

All measurements are reported in feet

Well ID	Measured Depth to Water (TOC)	Measured Depth to LNAPL (TOC)	Water Level (AMSL)
02-13	4.74	---	586.04
02-14	5.34	---	585.56
02-16	6.99	---	584.68
02-17	7.20	---	585.72
02-19	6.59	---	585.78
02-20	7.30	---	585.80
02-22	4.73	---	584.89
02-23	20.80	---	583.52
02-27	21.32	---	582.11
02-28	20.95	---	583.14
03-P1	10.09	9.82	584.39
03-P10	6.16	---	585.57
03-P11	6.92	---	585.60
03-P12	6.30	---	585.49
03-P13	7.13	---	585.82
03-P14	6.30	---	585.78
03-P15	7.00	---	585.53
03-P16	5.84	---	585.54
03-P17	7.65	---	585.50
03-P2	10.73	---	584.46
03-P3	10.82	---	584.48
03-P4	9.11	---	584.80
03-P5	6.05	---	585.35
03-P6	6.42	---	585.42
03-P7	6.70	---	585.43
03-P8	5.73	---	586.29
03-P9	6.16	---	585.48
04-P18	7.55	---	585.77
04-P19	7.65	---	585.50
LMW-02	40.17	---	593.31
LMW-04	58.08	---	583.14
LMW-06	36.82	---	583.67
LMW-07	38.73	---	584.28
LMW-08	19.48	---	581.44
LMW-09	19.42	---	581.50
LMW-10	18.46	---	582.42
LMW-11	10.99	---	579.95
LMW-12	11.37	---	579.91
P-87	11.97	---	582.65
P-88	12.11	---	582.56
P-89	11.21	---	582.43
P-90	11.53	---	581.80

AMSL = Above Mean Sea Level

"---" = No LNAPL detected

**TABLE 7 (Continued)**  
**WATER LEVEL GAUGING RESULTS**  
**November 8, 2004**

Johns Manville - Former Manufacturing Area

All measurements are reported in feet

Well ID	Measured Depth to Water (TOC)	Measured Depth to LNAPL (TOC)	Water Level (AMSL)
P-91	11.79	---	580.95
P-92	11.48	---	580.36
P-93	11.40	---	579.79
P-94	14.64	---	580.12
PM-E	17.20	---	581.47
PM-M	12.16	---	581.96
PM-W	13.30	---	581.69
SMW-01	5.51	---	584.06
SMW-02	5.52	---	583.93
SMW-03	10.59	---	581.12
SMW-04	6.47	---	581.16
SMW-05A	13.90	---	580.56
SMW-06	12.56	---	580.48
SMW-07A	13.08	---	580.77
SMW-09	11.97	---	580.58
SMW-10A	12.20	---	580.27
SMW-11A	11.95	---	580.25
SMW-12	8.98	---	582.49
SMW-13	8.28	---	582.51
SMW-W	9.91	---	579.78
SMW-X	8.20	---	580.44
SMW-Y	9.46	---	580.25
SMW-Z	7.70	---	579.44
UMW-01	8.29	---	584.77
UMW-01A	5.44	---	584.22
UMW-02	7.85	---	584.96
UMW-02A	4.41	---	584.10
UMW-03	7.71	---	584.95
UMW-03A	3.34	---	584.13
UMW-04	7.40	---	585.27
UMW-05	7.61	---	585.28
UMW-06	6.61	---	585.46
UMW-07	7.40	---	585.39
UMW-08	5.86	---	584.03
UMW-09	7.66	---	584.29
UMW-10	8.01	---	584.33
UMW-13	5.70	---	584.50
UMW-14	4.29	---	585.24
UMW-16	7.01	---	584.58
UMW-19	8.19	---	585.60
UMW-20	5.36	---	585.12
UMW-21R	10.26	---	582.21

AMSL = Above Mean Sea Level

"---" = No LNAPL detected

**TABLE 7 (Continued)**  
**WATER LEVEL GAUGING RESULTS**  
**November 8, 2004**

Johns Manville - Former Manufacturing Area

All measurements are reported in feet

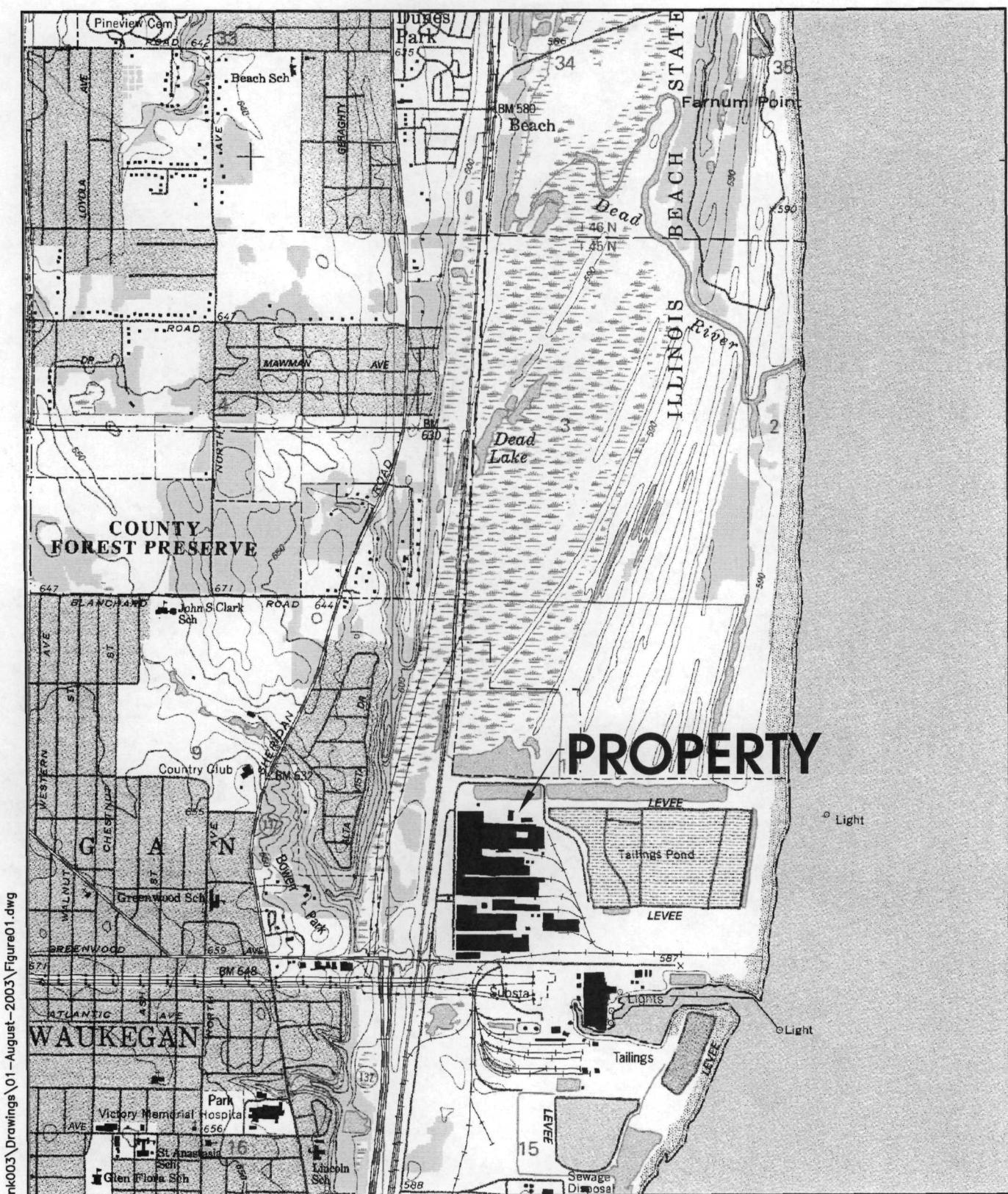
Well ID	Measured Depth to Water (TOC)	Measured Depth to LNAPL (TOC)	Water Level (AMSL)
UMW-22	6.83	---	583.36
UMW-23	9.70	---	582.95
UMW-26	5.21	---	584.54
UMW-27	7.31	---	585.19
UMW-28	7.73	---	585.26
UMW-29	7.26	---	585.00
UMW-31	9.98	---	583.32
UMW-32	8.43	---	585.20
UMW-33	7.89	---	583.96
UMW-34	10.42	---	585.41
UMW-35	4.19	---	585.40
UMW-36	7.03	---	585.90
UMW-37	10.46	---	584.49
UMW-38	10.54	---	585.57
UMW-39	10.50	---	585.65
UMW-40	10.28	---	585.68
UMW-41	7.76	---	585.61
UMW-42	6.70	---	585.08

AMSL = Above Mean Sea Level

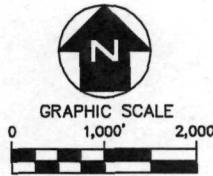
"---" = No LNAPL detected

## **FIGURES**

## **Figures**



T:\Johns Manville\7992.02Tank003\Drawings\01-August-2003\Figure01.dwg



Source:  
Zion, Illinois (1993) USGS  
7.5 Minute Series  
Quadrangle Map

## Property Location Map

**Johns Manville  
1871 North Pershing Road  
Waukegan, Illinois**



**Figure 1**



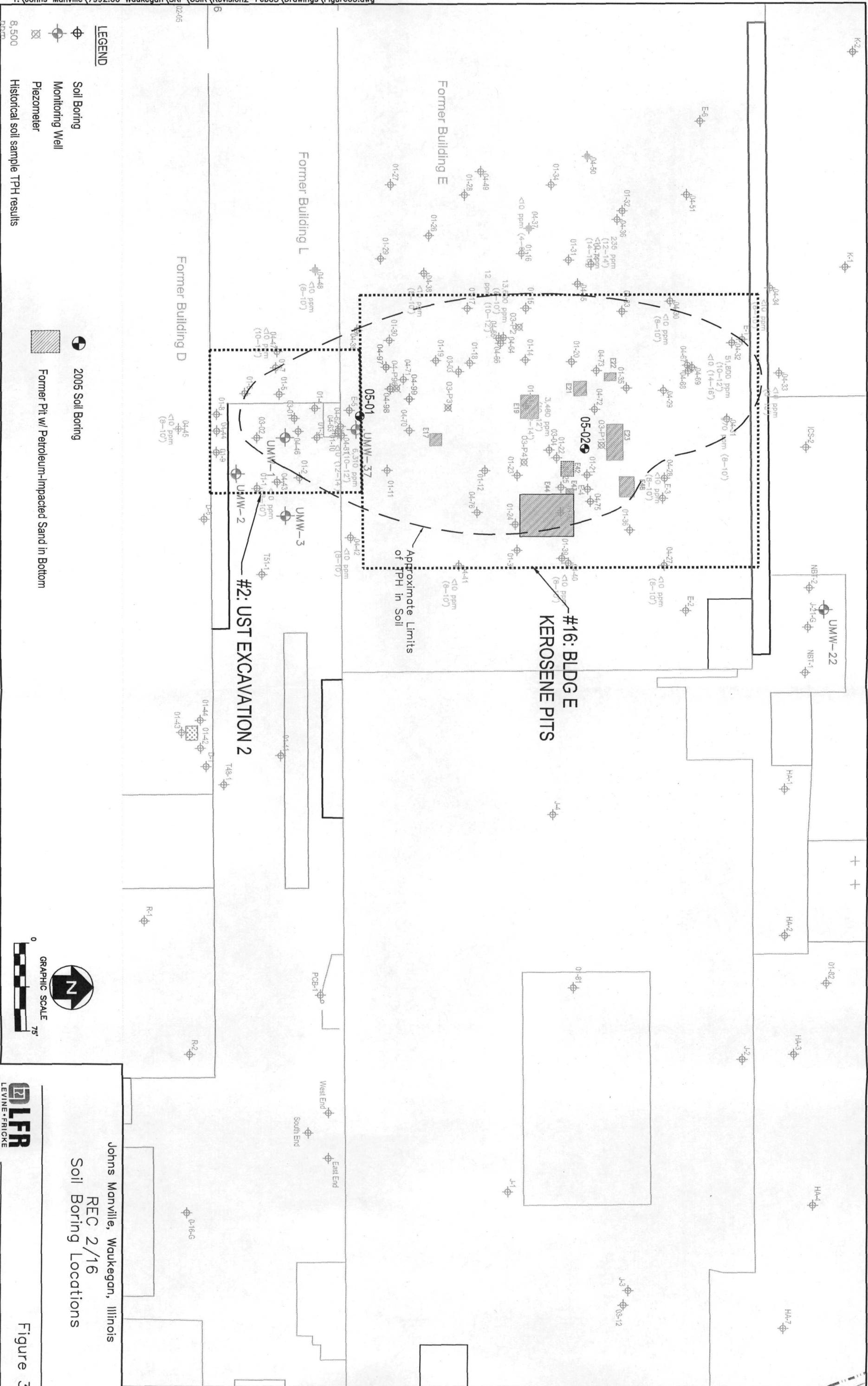


Figure 3

# FMR BLDG B

02-20

B-1

02-13

CONC

# FMR BLDG A

1000

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LFR

Johns Manville, Waukegan, Illinois  
REC12: Solvent Recovery Room  
Soil Boring Locations

Figure 5

# FMR BLDG C

Soil Boring Monitoring Well

● 2005 Soil Boring  
Saturated PID Reading  
B-14: BTEX <Tier I  
12-14: BTEX ND  
Historical soil sample results (mg/kg)

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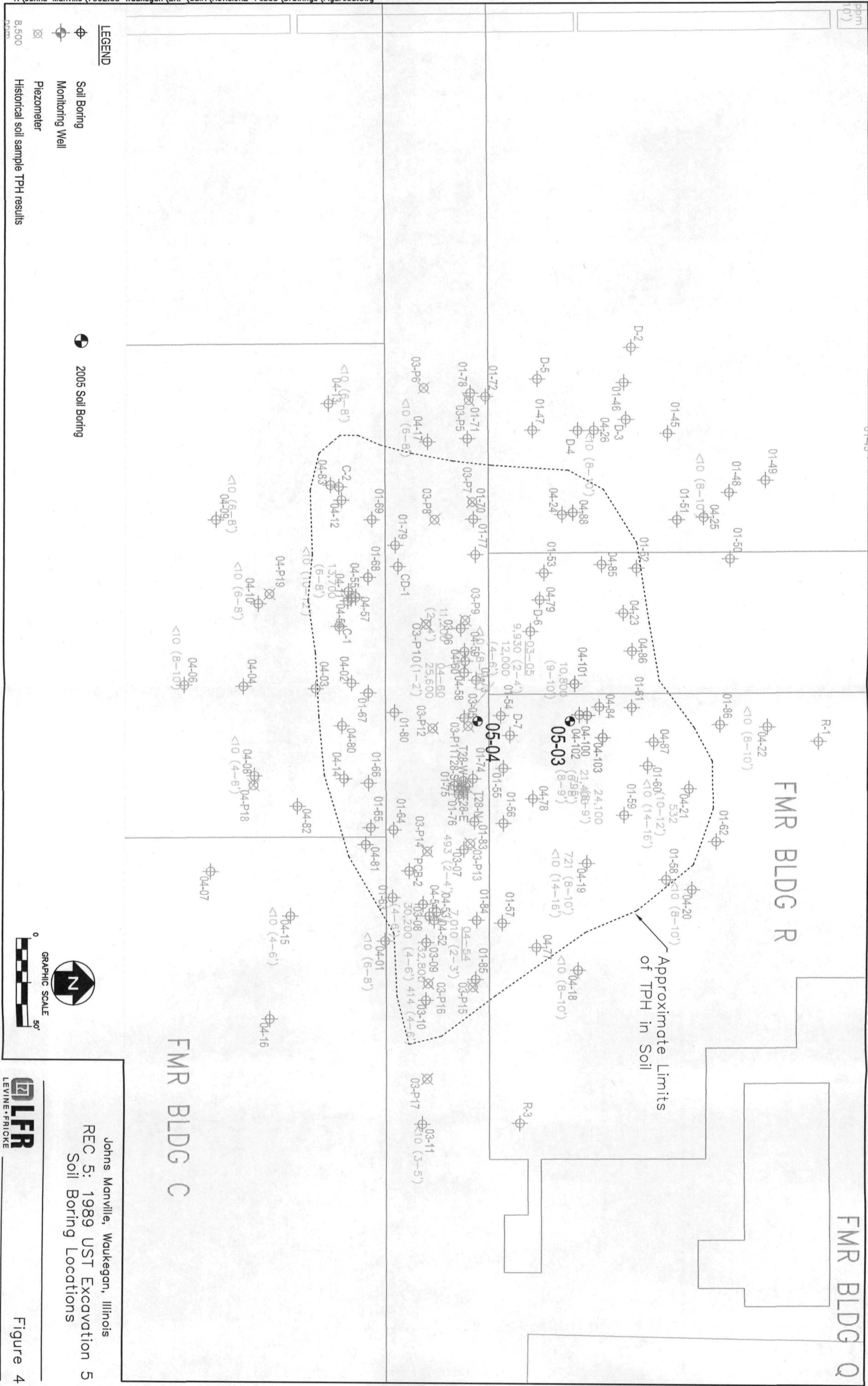
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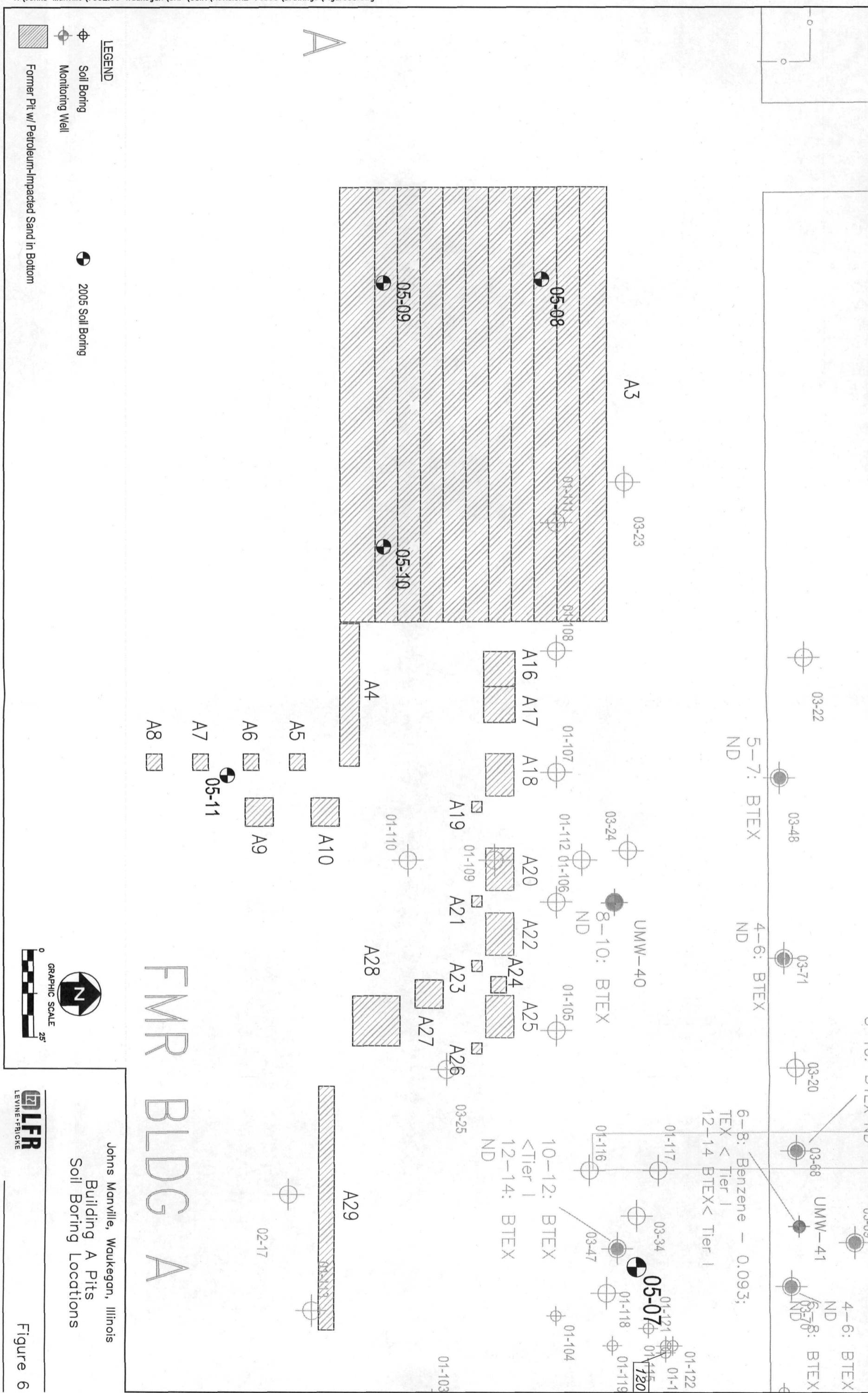


Figure 6

## APPENDIX A

## **Appendix A**

### **Soil Boring Logs**

# Log of Borehole: 05-01A

		Client: Johns Manville		Project: SRP - REC 2/16		Project No: 009-07992-00		
		Project Location: Waukegan, IL		Total Depth: 16	Ground Elevation:	Date Start: 1/4/05		
Surface Conditions: Sand and gravel						Date End: 1/4/05		
Drilling Contractor: CS Drilling			Driller: A. Mendez		Geologist/Engineer: DMK			
SAMPLE DATA				SUBSURFACE PROFILE				
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface	
					1		<b>Poorly-Graded Sand (SP)</b> Brown; dry; loose; med. sand; 5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.  *Background PID reading = 0.5 ppm.
1	Tube	71	0.5		2		gravel grades out; med. to coarse sand.	
					3			
					4			
					5			
					6			
2	Tube	65	0.6		7		moist.	
					8		grayish brown; wet; mod. dense.	
					9		gray; dense.	
					10		brownish gray.	
3	Tube	69	157		11		<b>Organic Peat (OL)</b> Dark brown; moist; stiff.	Offset 2' to SSE for twin borehole 05-01B. Sampled 8-10'. PID reading of sampled material = 235 ppm.
					12		<b>Poorly-Graded Sand (SP)</b> Dark brown; wet; dense; med. sand; 10% organics.	
					13		organics grade out; <5% fine gravel	
					14			
4	Tube	79	5.2		15			
					16		End of Borehole	
					17			

# Log of Borehole: 05-02A

 <b>LFR</b> LEVINE-FRICKE		Client: Johns Manville		Project: SRP - REC 2/16		Project No: 009-07992-00					
		Project Location: Waukegan, IL		Total Depth: 12		Ground Elevation:					
<b>Surface Conditions:</b> Sand and gravel						<b>Date Start:</b> 1/4/05					
						<b>Date End:</b> 1/4/05					
<b>Drilling Contractor:</b> CS Drilling				<b>Driller:</b> A. Mendez		<b>Geologist/Engineer:</b> DMK					
SAMPLE DATA				SUBSURFACE PROFILE							
Sample Number	Sample Type	Recovery (%)	PID/FID (ppm)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks			
					0		Ground Surface				
					1		<b>Poorly-Graded Sand (SP)</b> Brown; dry; mod. dense; med. sand; 5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.			
1	Tube	73	2.8		2		gravel grades out.	*Background PID reading = 0.6 ppm.			
					3		dark brown; moist.				
					4						
					5		brownish gray.				
2	Tube	54	15.2		6						
					7		gray; wet.				
					8		black; strong petro. odor.				
					9		dark gray; very strong odor; sheen on water.	Offset 1-2' north for twin borehole 05-02B.			
					10			Sample 8-10'. PID reading of sampled material = 81.6 ppm.			
3	Tube	75	63.9		11		<b>Organic Peat (OL)</b> Dark brown; moist; no plasticity; slight odor.				
					12		<b>Poorly-Graded Sand (SP)</b> Grayish brown; wet; dense; med to coarse sand; 5% organics; strong odor.				
					13		dark gray; very slight odor.				
					14						
					15						
					16						
					17						
							<b>End of Borehole</b>				

# Log of Borehole: 05-03A

 <b>LFR</b> LEVINE-FRICKE		Client: Johns Manville		Project: SRP		Project No: 009-07992-00			
		Project Location: Waukegan, IL		Total Depth: 16	Ground Elevation:		Date Start: 1/4/05		
<b>Surface Conditions:</b> Sand and gravel						<b>Date End:</b> 1/4/05			
<b>Drilling Contractor:</b> CS Drilling			<b>Driller:</b> A. Mendez		<b>Geologist/Engineer:</b> DMK				
<b>SAMPLE DATA</b>			<b>SUBSURFACE PROFILE</b>						
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks	
1	Tube	81	1.6		0		Ground Surface <b>Poorly-Graded Sand (SP)</b> Brown; dry; mod. dense; med. sand; 5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.  *Background PID reading = 0.8 ppm.	
			1.2		1				
					2				
					3				
					4				
					5		moist.		
2	Tube	71	1089		6			Offset for twin borehole 05-03B. Sampled 5-7'. PID reading of sampled material = 1246 ppm.	
			866		7		black; strong odor. grayish brown.		
					8				
					9		gray; wet.		
3	Tube	60	819		10		<b>Well-Graded Sand with Gravel (SW)</b> Dark gray; wet; mod. dense; med. to coarse sand; 20% fine gravel.		
			516		11		<b>Poorly-Graded Gravel with Sand (GP)</b> Dark gray; wet; mod. dense; fine gravel; 20% med. sand.		
					12		<b>Well-Graded Sand (SW)</b> Dark gray; wet; dense; med. to coarse sand; <5% fine gravel.		
					13		<b>Poorly-Graded Sand (SP)</b> Brown; wet; dense; med. sand; slight odor.		
4	Tube	77	8.4		14				
			2.6		15		<b>Well-Graded Sand (SW)</b> Brownish gray; wet; dense; med. to very coarse sand; 5% fine gravel; no odor.		
					16		End of Borehole		
					17				

## Log of Borehole: 05-04A

 LEVINE-FRICKE		Client: Johns Manville		Project: SRP - REC 5			Project No: 009-07992-00
		Project Location: Waukegan, IL		Total Depth: 12	Ground Elevation:		Date Start: 1/4/05
Surface Conditions: Sand and gravel					Date End: 1/4/05		
Drilling Contractor: CS Drilling			Driller: A. Mendez		Geologist/Engineer: DMK		
SAMPLE DATA				SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	PID/FID (ppm)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description
1	Tube	63	11.1		0		Ground Surface <b>Poorly-Graded Sand (SP)</b> Brown; dry; loose; med. sand; 5% fine gravel
			959		1		black
					2		brown; dry; mod. dense.
					3		grayish brown; very moist; mod. dense; fine to coarse sand.
					4		dark gray to black; wet.
					5		odor: sheen on water.
2	Tube	67	410		6		
			916		7		<b>Poorly-Graded Gravel (GP)</b> Dark gray to black; wet; mod. dense; fine gravel; 10% coarse sand.
					8		
					9		<b>Well Graded Sand with Gravel (SW)</b> Dark gray; wet; mod. dense; med. to coarse sand; 10% fine gravel; 5% coarse gravel.
3	Tube	56	106		10		<b>Poorly-Graded Sand (SP)</b> Brownish gray; wet; dense; fine to coarse sand; <5% fine gravel.
			6.4		11		dark grayish brown.
					12		End of Borehole
					13		
					14		
					15		
					16		
					17		

# Log of Borehole: 05-05A

 <b>LFR</b> LEVINE-FRICKE		Client: Johns Manville		Project: SRP - REC 12		Project No: 009-07992-00			
Project Location: Waukegan, IL		Total Depth: 16		Ground Elevation:		Date Start: 1/4/05			
Surface Conditions: Sand and gravel						Date End: 1/4/05			
Drilling Contractor: CS Drilling			Driller: A. Mendez		Geologist/Engineer: DMK				
<b>SAMPLE DATA</b>				<b>SUBSURFACE PROFILE</b>					
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks	
1	Tube	63	5.6		0		Ground Surface <b>Poorly-Graded Sand (SP)</b> Brown; dry; med. dense; med. to coarse sand; <5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.  *Background PID reading = 0.6 ppm.  No sample collected.	
2	Tube	69	2.5		1				
			3.4		2				
			1.4		3				
					4				
					5				
					6				
					7		dark brown. brown; moist. 10% fine gravel.		
					8				
					9				
					10		wet.		
					11		orangish brown.		
					12		gray; wet. slight odor.		
					13				
					14				
4	Tube	46	1.1		15		<b>Organic Peat (OL)</b> Dark brown; moist; very stiff; no plasticity.		
			0.6		16		<b>Poorly-Graded Sand (SP)</b> Grayish brown; wet; dense; med. sand; trace organics.		
					17		End of Borehole		

## Log of Borehole: 05-06A

 <b>LFR</b> LEVINE-FRICKE		Client: Johns Manville		Project: SRP - REC 12		Project No: 009-07992-00			
Project Location: Waukegan, IL		Total Depth: 12		Ground Elevation:		Date Start: 1/4/05			
<b>Surface Conditions:</b> Sand and gravel					Date End: 1/4/05				
<b>Drilling Contractor:</b> CS Drilling			<b>Driller:</b> A. Mendez		<b>Geologist/Engineer:</b> DMK				
<b>SAMPLE DATA</b>				<b>SUBSURFACE PROFILE</b>					
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks	
					0		Ground Surface		
1	Tube	83	1.0		1		<b>Poorly-Graded Sand (SP)</b> Brown; dry; loose; med. sand; trace fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.  *Background PID reading = 0.6 ppm.	
			732		2				
2	Tube	63	94.8		3		<b>Silty Sand (SM)</b> Black; dry; dense; med. sand; 20% silt fines; 30% slag.		
			2073		4		<b>Poorly-Graded Sand (SP)</b> Brownish gray; moist; loose.		
3	Tube	63	889		5		gray; moist; med. dense; fine to med. sand; slight odor.		
			73.4		6		wet; strong odor.	Offset for twin borehole 05-06B. Sampled 7-9'. PID reading of sampled material = 2511.	
					7		trace fine gravel.		
					8		slight odor.		
					9				
					10		<b>Organic Peat (OL)</b> Dark brown; moist; stiff; no plasticity.		
					11		<b>Poorly Graded Sand (SP)</b> Grayish brown; wet; mod. dense; med. sand; 5% organics.		
					12		End of Borehole		
					13				
					14				
					15				
					16				
					17				

### **Log of Borehole: 05-07A**

# Log of Borehole: 05-08A

 LEVINE-FRICKE		Client: Johns Manville		Project: SRP - Bldg. A Pits		Project No: 009-07992-00			
		Project Location: Waukegan, IL		Total Depth: 12		Ground Elevation:			
Surface Conditions: Sand and gravel						Date Start: 1/4/05			
Drilling Contractor: CS Drilling			Driller: A. Mendez		Geologist/Engineer: DMK				
<b>SAMPLE DATA</b>			<b>SUBSURFACE PROFILE</b>						
Sample Number	Sample Type	Recovery (%)	PID/ID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks	
1	Tube	65	1.1		0		Ground Surface <b>Poorly-Graded Sand (SP)</b> Brown; dry; loose; mod. dense; med. sand; <5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.  *Background PID reading = 0.8 ppm. No sample collected.	
2	Tube	67	1.1		1				
			0.9		2				
			1.1		3				
			0.9		4				
			1.1		5				
			0.9		6		moist.		
			1.1		7		1" layer brick: orangish brown.		
			0.9		8		wet.		
			0.9		9		med. to coarse sand.		
			0.9		10		with 10% pebbles.		
3	Tube	60	0.9		10		<b>Poorly-Graded Gravel (GP)</b> Brown; wet; loose; fine gravel; trace sand.		
			0.9		11		<b>Well-Graded Sand (SW)</b> Brownish gray; wet; mod. dense; fine to coarse sand; trace fine gravel.		
			0.9		12		<b>Poorly Graded Sand (SP)</b> Brownish gray; wet; dense; med. sand.		
					13		End of Borehole		
					14				
					15				
					16				
					17				

## *Log of Borehole: 05-09A*

# Log of Borehole: 05-10A

 <b>LFR</b> LEVINE-FRICKE		Client: Johns Manville		Project: SRP - Bldg. A Pits		Project No: 009-07992-00					
		Project Location: Waukegan, IL		Total Depth: 12		Ground Elevation:					
<b>Surface Conditions:</b> Sand and gravel						<b>Date Start:</b> 1/4/05					
						<b>Date End:</b> 1/4/05					
<b>Drilling Contractor:</b> CS Drilling				<b>Driller:</b> A. Mendez		<b>Geologist/Engineer:</b> DMK					
SAMPLE DATA				SUBSURFACE PROFILE							
Sample Number	Sample Type	Recovery (%)	PID/FID (ppm)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description				
							Remarks				
1	Tube	75	1.1		0		Ground Surface				
					1		<b>Poorly-Graded Sand (SP)</b> Brown; dry; loose; med. sand. wood piece.				
			1.0		2						
					3						
					4						
					5						
					6						
					7		moist.				
2	Tube	63	1.1		8		brownish gray.				
			1.2		9						
					10						
					11						
					12						
					13						
					14						
					15						
					16						
					17						
				End of Borehole							

# Log of Borehole: 05-11A

 <b>LFR</b> LEVINE-FRICKE		<b>Client:</b> Johns Manville		<b>Project:</b> SRP - Bldg. A Pits		<b>Project No:</b> 009-07992-00
		<b>Project Location:</b> Waukegan, IL		Total Depth: 12	Ground Elevation:	Date Start: 1/4/05
<b>Surface Conditions:</b> Sand and gravel					Date End: 1/4/05	
<b>Drilling Contractor:</b> CS Drilling			<b>Driller:</b> A. Mendez		<b>Geologist/Engineer:</b> DMK	
SAMPLE DATA			SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	PID/FID (ppm)	Analytical Soil Sample	Depth (ft) Symbol	Soil Description
						Ground Surface
1	Tube	67	0.9		0	<b>Poorly-Graded Sand (SP)</b> Brown; dry; loose; med. sand; <5% fine gravel.
			0.9		1	orangish brown.
2	Tube	71	1.1		2	1" layer fine gravel.
			1.1		3	
3	Tube	63	1.1		4	<b>Poorly-Graded Sand (SP)</b> Grayish brown; wet; mod. dense; med. sand.
			1.1		5	
					6	<b>Organic Peat (OL)</b> Black; moist; stiff; no plasticity.
					7	
					8	<b>Poorly-Graded Sand (SP)</b> Dark grayish brown; wet; dense; med. sand; 10% organics.
					9	
					10	
					11	
					12	End of Borehole
					13	
					14	
					15	
					16	
					17	

Remarks

Boring advanced with  
a geoprobe using a  
4' long by 2" OD  
macrotube sampler.

\*Background PID  
reading = 0.8 ppm.  
No sample collected.

## **Log of Borehole: 05-12A**

<b>LFR</b> LEVINE+FRICKE		Client: Johns Manville		Project: SRP - REC 12		Project No: 009-07992-00		
Project Location: Waukegan, IL				Total Depth: 16	Ground Elevation:	Date Start: 1/4/05		
<b>Surface Conditions:</b> Sand and gravel						<b>Date End:</b> 1/4/05		
<b>Drilling Contractor:</b> CS Drilling			<b>Driller:</b> A. Mendez		<b>Geologist/Engineer:</b> DMK			
SAMPLE DATA			SUBSURFACE PROFILE					
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft) Symbol	Soil Description	Remarks	
1	Tube	67	1.8		0 Ground Surface	<b>Poorly-Graded Sand (SP)</b> Brown: dry; loose; med. sand; 5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.  *Background PID reading = 0.8 ppm.	
			907		1			
					2			
2	Tube	46	1391		3	grayish brown; wet; odor.		
			252		4	dark gray; strong odor; water with sheen.	Offset 1' SE for twin borehole 05-12B. Sampled 4-6'. PID reading of sampled material = 2052 ppm.	
					5			
					6			
					7			
					8	brownish gray; wet; slight odor.		
					9			
3	Tube	65	80.1		10 <b>Organic Peat (OL)</b>	Dark brown to black; moist; stiff; no plasticity.		
			3.4		11 <b>Poorly-Graded Sand (SP)</b>	Grayish brown; wet; dense; med. sand; trace organics; no odor.		
					12	stratified.		
					13			
					14			
					15			
4	Tube	71	1.1		16	End of Borehole		
			2.3		17			

## APPENDIX B

**Appendix B**

**Monitoring Well Sampling Form**



## GROUNDWATER SAMPLE COLLECTION LOG

**Project Name:** Johns Manville – SRP  
Waukegan, IL

**Well Number:** UMW-16

**Date Collected:** January 6, 2005

### Purging Information:

*(all water-level measurements collected from the north side of the top of the well casing)*

Purging Equipment: disposable polyethylene bailer

A = Casing I.D. (inches): 2

B = Unit Casing Volume (ft): 0.163

C = Total Well Depth (ft): 11.57

D = Depth to Water (ft): 6.92

E = Length of Static Water Column (C-D): 4.65

F = Water Volume in Casing (B  $\otimes$  E): 0.76

Casing Volume to be Purged: (3  $\otimes$  F): 2.28

Time	Cumulative Volume Purged (gals)	Temperature (°C)	Conductivity (µS)	Acidity (pH)	Comments
1506	0.75	10.6	706	7.62	Slightly turbid, gray
1510	2.0	10.6	195.5	7.55	Mostly clear, grayish
1513	3.5	11.1	734	7.51	Mostly clear, less solids
1517	5.5	11.0	739	7.48	Mostly clear, some solids

Sample collected @ 1520

## APPENDIX C

## **Appendix C**

### **Laboratory Analytical Reports**



**First  
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IL ELAP / NELAC Accreditation # 100292

January 12, 2005

Ms. Wendy Krahn  
**LEVINE-FRICKE**  
630 Tollgate Road  
Suite D  
Elgin, IL 60123-9364

Project ID: 009-07992-00 JM  
First Environmental File ID: 46049-56  
Date Received: January 5, 2005

Dear Ms. Krahn:

The above referenced project was analyzed as directed on the enclosed chain of custody form.

Analyses were performed in accordance with the methods found in the USEPA publication: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3<sup>rd</sup> Edition, December 1996. Specific method references are listed on the analytical report. Results have been expressed on a dry weight basis per method protocol.

NOTE: Some reporting limits have been elevated due to matrix interferences.

All analyses were performed within established holding times, and all Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met; Certification No. 000986 – 03/02/04-02/28/05. QA/QC documentation will remain on file for future reference.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William H. Mottashed  
Project Manager



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46049	Date Taken:	01/04/05
Sample Description:	05-1B (8-10)	Time Taken:	0837
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	84.71	%	

### Volatile Organic Compounds Method 5035A/8260B

Analysis Date: 01/06/05

Acetone	< 100	ug/kg
Benzene	< 100	ug/kg
Bromodichloromethane	< 100	ug/kg
Bromoform	< 100	ug/kg
Bromomethane	< 100	ug/kg
2-Butanone	< 100	ug/kg
Carbon disulfide	< 100	ug/kg
Carbon tetrachloride	< 100	ug/kg
Chlorobenzene	< 100	ug/kg
Chlorodibromomethane	< 100	ug/kg
Chloroethane	< 100	ug/kg
Chloroform	< 100	ug/kg
Chloromethane	< 100	ug/kg
1,1-Dichloroethane	< 100	ug/kg
1,2-Dichloroethane	< 100	ug/kg
1,1-Dichloroethene	< 100	ug/kg
cis-1,2-Dichloroethene	< 100	ug/kg
trans-1,2-Dichloroethene	< 100	ug/kg
1,2-Dichloropropane	< 100	ug/kg
cis-1,3-Dichloropropene	< 100	ug/kg
trans-1,3-Dichloropropene	< 100	ug/kg
Ethyl benzene	< 100	ug/kg
2-Hexanone	< 100	ug/kg
4-Methyl-2-pentanone	< 100	ug/kg
Methylene chloride	< 100	ug/kg
MTBE	< 100	ug/kg
Styrene	< 100	ug/kg
1,1,2,2-Tetrachloroethane	< 100	ug/kg
Tetrachloroethene	< 100	ug/kg
Toluene	< 100	ug/kg
1,1,1-Trichloroethane	< 100	ug/kg
1,1,2-Trichloroethane	< 100	ug/kg
Trichloroethene	< 100	ug/kg
Vinyl Acetate	< 100	ug/kg
Vinyl Chloride	< 100	ug/kg
Xylenes (total)	< 100	ug/kg



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46049	Date Taken:	01/04/05
Sample Description:	05-1B (8-10)	Time Taken:	0837
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
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### TPH - Modified Method 8015B

Analysis Date: 01/10/05

TPH Gasoline	< 150	mg/kg
TPH Diesel	9,670	mg/kg
TPH Oil	< 150	mg/kg
TPH Total	9,670	mg/kg



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46050	Date Taken:	01/04/05
Sample Description:	05-2B (7-9)	Time Taken:	0925
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	78.83	%	

### Volatile Organic Compounds Method 5035A/8260B

Analysis Date: 01/06/05

Acetone	< 100	ug/kg
Benzene	< 100	ug/kg
Bromodichloromethane	< 100	ug/kg
Bromoform	< 100	ug/kg
Bromomethane	< 100	ug/kg
2-Butanone	< 100	ug/kg
Carbon disulfide	< 100	ug/kg
Carbon tetrachloride	< 100	ug/kg
Chlorobenzene	< 100	ug/kg
Chlorodibromomethane	< 100	ug/kg
Chloroethane	< 100	ug/kg
Chloroform	< 100	ug/kg
Chloromethane	< 100	ug/kg
1,1-Dichloroethane	< 100	ug/kg
1,2-Dichloroethane	< 100	ug/kg
1,1-Dichloroethene	< 100	ug/kg
cis-1,2-Dichloroethene	< 100	ug/kg
trans-1,2-Dichloroethene	< 100	ug/kg
1,2-Dichloropropane	< 100	ug/kg
cis-1,3-Dichloropropene	< 100	ug/kg
trans-1,3-Dichloropropene	< 100	ug/kg
Ethyl benzene	760	ug/kg
2-Hexanone	< 100	ug/kg
4-Methyl-2-pentanone	< 100	ug/kg
Methylene chloride	< 100	ug/kg
MTBE	< 100	ug/kg
Styrene	< 100	ug/kg
1,1,2,2-Tetrachloroethane	< 100	ug/kg
Tetrachloroethene	< 100	ug/kg
Toluene	< 100	ug/kg
1,1,1-Trichloroethane	< 100	ug/kg
1,1,2-Trichloroethane	< 100	ug/kg
Trichloroethene	< 100	ug/kg
Vinyl Acetate	< 100	ug/kg
Vinyl Chloride	< 100	ug/kg
Xylenes (total)	2,880	ug/kg



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**Analytical Report**

Client:	LFR LEVINE-FRICKE	Date Received:	01/05/05
Project ID:	009-07992-00 JM	Date Taken:	01/04/05
Sample Number:	46050	Time Taken:	0925
Sample Description:	05-2B (7-9)	Date Reported:	01/12/05
Lab File ID:	46049-56		

<b>Analyte</b>	<b>Result</b>	<b>Units</b>	<b>Flags</b>
----------------	---------------	--------------	--------------

**TPH - Modified Method 8015B**

Analysis Date: 01/10/05

TPH Gasoline	< 150	mg/kg
TPH Diesel	3,000	mg/kg
TPH Oil	2,300	mg/kg
TPH Total	5,300	mg/kg



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46051	Date Taken:	01/04/05
Sample Description:	05-3B (5-7)	Time Taken:	1033
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	92.33	%	

### Volatile Organic Compounds Method 5035A/8260B

Analysis Date: 01/06/05

Acetone	< 100	ug/kg
Benzene	< 100	ug/kg
Bromodichloromethane	< 100	ug/kg
Bromoform	< 100	ug/kg
Bromomethane	< 100	ug/kg
2-Butanone	< 100	ug/kg
Carbon disulfide	< 100	ug/kg
Carbon tetrachloride	< 100	ug/kg
Chlorobenzene	< 100	ug/kg
Chlorodibromomethane	< 100	ug/kg
Chloroethane	< 100	ug/kg
Chloroform	< 100	ug/kg
Chloromethane	< 100	ug/kg
1,1-Dichloroethane	< 100	ug/kg
1,2-Dichloroethane	< 100	ug/kg
1,1-Dichloroethene	< 100	ug/kg
cis-1,2-Dichloroethene	< 100	ug/kg
trans-1,2-Dichloroethene	< 100	ug/kg
1,2-Dichloropropane	< 100	ug/kg
cis-1,3-Dichloropropene	< 100	ug/kg
trans-1,3-Dichloropropene	< 100	ug/kg
Ethyl benzene	< 100	ug/kg
2-Hexanone	< 100	ug/kg
4-Methyl-2-pentanone	< 100	ug/kg
Methylene chloride	< 100	ug/kg
MTBE	< 100	ug/kg
Styrene	< 100	ug/kg
1,1,2,2-Tetrachloroethane	< 100	ug/kg
Tetrachloroethene	< 100	ug/kg
Toluene	< 100	ug/kg
1,1,1-Trichloroethane	< 100	ug/kg
1,1,2-Trichloroethane	< 100	ug/kg
Trichloroethene	< 100	ug/kg
Vinyl Acetate	< 100	ug/kg
Vinyl Chloride	< 100	ug/kg
Xylenes (total)	< 100	ug/kg



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IL ELAP / NELAC Accreditation # 100292

**Analytical Report**

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46051	Date Taken:	01/04/05
Sample Description:	05-3B (5-7)	Time Taken:	1033
Lab File ID:	46049-56	Date Reported:	01/12/05

<b>Analyte</b>	<b>Result</b>	<b>Units</b>	<b>Flags</b>
<b>TPH - Modified Method 8015B</b>			
Analysis Date:	01/10/05		
TPH Gasoline	< 250	mg/kg	
TPH Diesel	< 250	mg/kg	
TPH Oil	< 250	mg/kg	
TPH Total	< 250	mg/kg	



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**Analytical Report**

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46052	Date Taken:	01/04/05
Sample Description:	05-4B (4-5)	Time Taken:	1112
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	86.42	%	

**Volatile Organic Compounds Method 5035A/8260B**

Analysis Date: 01/06/05

Acetone	< 100	ug/kg
Benzene	< 100	ug/kg
Bromodichloromethane	< 100	ug/kg
Bromoform	< 100	ug/kg
Bromomethane	< 100	ug/kg
2-Butanone	< 100	ug/kg
Carbon disulfide	< 100	ug/kg
Carbon tetrachloride	< 100	ug/kg
Chlorobenzene	< 100	ug/kg
Chlorodibromomethane	< 100	ug/kg
Chloroethane	< 100	ug/kg
Chloroform	< 100	ug/kg
Chloromethane	< 100	ug/kg
1,1-Dichloroethane	< 100	ug/kg
1,2-Dichloroethane	< 100	ug/kg
1,1-Dichloroethene	< 100	ug/kg
cis-1,2-Dichloroethene	< 100	ug/kg
trans-1,2-Dichloroethene	< 100	ug/kg
1,2-Dichloropropane	< 100	ug/kg
cis-1,3-Dichloropropene	< 100	ug/kg
trans-1,3-Dichloropropene	< 100	ug/kg
Ethyl benzene	223	ug/kg
2-Hexanone	< 100	ug/kg
4-Methyl-2-pentanone	< 100	ug/kg
Methylene chloride	< 100	ug/kg
MTBE	< 100	ug/kg
Styrene	< 100	ug/kg
1,1,2,2-Tetrachloroethane	< 100	ug/kg
Tetrachloroethene	< 100	ug/kg
Toluene	< 100	ug/kg
1,1,1-Trichloroethane	< 100	ug/kg
1,1,2-Trichloroethane	< 100	ug/kg
Trichloroethene	< 100	ug/kg
Vinyl Acetate	< 100	ug/kg
Vinyl Chloride	< 100	ug/kg
Xylenes (total)	< 100	ug/kg



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## Analytical Report

Client: LFR LEVINE-FRICKE  
Project ID: 009-07992-00 JM  
Sample Number: 46052  
Sample Description: 05-4B (4-5)  
Lab File ID: 46049-56

Date Received: 01/05/05  
Date Taken: 01/04/05  
Time Taken: 1112  
Date Reported: 01/12/05

Analyte	Result	Units	Flags
<b>TPH - Modified Method 8015B</b>			
Analysis Date:	01/10/05		
TPH Gasoline	< 250	mg/kg	
TPH Diesel	< 250	mg/kg	
TPH Oil	< 250	mg/kg	
TPH Total	< 250	mg/kg	



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46053	Date Taken:	01/04/05
Sample Description:	05-6B (7-9)	Time Taken:	1400
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	86.63	%	

### Volatile Organic Compounds Method 5035A/8260B

Analysis Date: 01/07/05

Acetone	< 10.0	ug/kg
Benzene	< 5.0	ug/kg
Bromodichloromethane	< 5.0	ug/kg
Bromoform	< 5.0	ug/kg
Bromomethane	< 10.0	ug/kg
2-Butanone	< 10.0	ug/kg
Carbon disulfide	< 5.0	ug/kg
Carbon tetrachloride	< 5.0	ug/kg
Chlorobenzene	< 5.0	ug/kg
Chlorodibromomethane	< 5.0	ug/kg
Chloroethane	< 10.0	ug/kg
Chloroform	< 5.0	ug/kg
Chloromethane	< 10.0	ug/kg
1,1-Dichloroethane	< 5.0	ug/kg
1,2-Dichloroethane	< 5.0	ug/kg
1,1-Dichloroethene	< 5.0	ug/kg
cis-1,2-Dichloroethene	< 5.0	ug/kg
trans-1,2-Dichloroethene	< 5.0	ug/kg
1,2-Dichloropropane	< 5.0	ug/kg
cis-1,3-Dichloropropene	< 5.0	ug/kg
trans-1,3-Dichloropropene	< 5.0	ug/kg
Ethyl benzene	3,140	ug/kg
2-Hexanone	< 10.0	ug/kg
4-Methyl-2-pentanone	< 10.0	ug/kg
Methylene chloride	< 5.0	ug/kg
MTBE	< 5.0	ug/kg
Styrene	< 5.0	ug/kg
1,1,2,2-Tetrachloroethane	< 5.0	ug/kg
Tetrachloroethene	< 5.0	ug/kg
Toluene	10.9	ug/kg
1,1,1-Trichloroethane	< 5.0	ug/kg
1,1,2-Trichloroethane	< 5.0	ug/kg
Trichloroethene	< 5.0	ug/kg
Vinyl Acetate	< 10.0	ug/kg
Vinyl Chloride	< 10.0	ug/kg
Xylenes (total)	2,400	ug/kg



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**Analytical Report**

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46053	Date Taken:	01/04/05
Sample Description:	05-6B (7-9)	Time Taken:	1400
Lab File ID:	46049-56	Date Reported:	01/12/05

<b>Analyte</b>	<b>Result</b>	<b>Units</b>	<b>Flags</b>
<b>TPH - Modified Method 8015B</b>			
Analysis Date:	01/11/05		
TPH Gasoline	176	mg/kg	
TPH Diesel	< 15	mg/kg	
TPH Oil	117	mg/kg	
TPH Total	293	mg/kg	



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46054	Date Taken:	01/04/05
Sample Description:	05-7B (8-10)	Time Taken:	1440
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	80.24	%	

### Volatile Organic Compounds Method 5035A/8260B

Analysis Date: 01/06/05

Acetone	< 100	ug/kg
Benzene	< 100	ug/kg
Bromodichloromethane	< 100	ug/kg
Bromoform	< 100	ug/kg
Bromomethane	< 100	ug/kg
2-Butanone	< 100	ug/kg
Carbon disulfide	< 100	ug/kg
Carbon tetrachloride	< 100	ug/kg
Chlorobenzene	< 100	ug/kg
Chlorodibromomethane	< 100	ug/kg
Chloroethane	< 100	ug/kg
Chloroform	< 100	ug/kg
Chloromethane	< 100	ug/kg
1,1-Dichloroethane	< 100	ug/kg
1,2-Dichloroethane	< 100	ug/kg
1,1-Dichloroethene	< 100	ug/kg
cis-1,2-Dichloroethene	< 100	ug/kg
trans-1,2-Dichloroethene	< 100	ug/kg
1,2-Dichloropropane	< 100	ug/kg
cis-1,3-Dichloropropene	< 100	ug/kg
trans-1,3-Dichloropropene	< 100	ug/kg
Ethyl benzene	< 100	ug/kg
2-Hexanone	< 100	ug/kg
4-Methyl-2-pentanone	< 100	ug/kg
Methylene chloride	< 100	ug/kg
MTBE	< 100	ug/kg
Styrene	< 100	ug/kg
1,1,2,2-Tetrachloroethane	< 100	ug/kg
Tetrachloroethene	< 100	ug/kg
Toluene	< 100	ug/kg
1,1,1-Trichloroethane	< 100	ug/kg
1,1,2-Trichloroethane	< 100	ug/kg
Trichloroethene	< 100	ug/kg
Vinyl Acetate	< 100	ug/kg
Vinyl Chloride	< 100	ug/kg
Xylenes (total)	< 100	ug/kg



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**Analytical Report**

Client: LFR LEVINE-FRICKE  
Project ID: 009-07992-00 JM  
Sample Number: 46054  
Sample Description: 05-7B (8-10)  
Lab File ID: 46049-56

Date Received: 01/05/05  
Date Taken: 01/04/05  
Time Taken: 1440  
Date Reported: 01/12/05

<b>Analyte</b>	<b>Result</b>	<b>Units</b>	<b>Flags</b>
<b>TPH - Modified Method 8015B</b>			
Analysis Date:	01/11/05		
TPH Gasoline	< 10	mg/kg	
TPH Diesel	< 10	mg/kg	
TPH Oil	< 10	mg/kg	
TPH Total	< 10	mg/kg	



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**Analytical Report**

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46055	Date Taken:	01/04/05
Sample Description:	05-10B (7-8)	Time Taken:	1557
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	82.90	%	

**Volatile Organic Compounds Method 5035A/8260B**

Analysis Date: 01/06/05

Acetone	< 10.0	ug/kg
Benzene	< 5.0	ug/kg
Bromodichloromethane	< 5.0	ug/kg
Bromoform	< 5.0	ug/kg
Bromomethane	< 10.0	ug/kg
2-Butanone	< 10.0	ug/kg
Carbon disulfide	< 5.0	ug/kg
Carbon tetrachloride	< 5.0	ug/kg
Chlorobenzene	< 5.0	ug/kg
Chlorodibromomethane	< 5.0	ug/kg
Chloroethane	< 10.0	ug/kg
Chloroform	< 5.0	ug/kg
Chloromethane	< 10.0	ug/kg
1,1-Dichloroethane	< 5.0	ug/kg
1,2-Dichloroethane	< 5.0	ug/kg
1,1-Dichloroethene	< 5.0	ug/kg
cis-1,2-Dichloroethene	< 5.0	ug/kg
trans-1,2-Dichloroethene	< 5.0	ug/kg
1,2-Dichloropropane	< 5.0	ug/kg
cis-1,3-Dichloropropene	< 5.0	ug/kg
trans-1,3-Dichloropropene	< 5.0	ug/kg
Ethyl benzene	< 5.0	ug/kg
2-Hexanone	< 10.0	ug/kg
4-Methyl-2-pentanone	< 10.0	ug/kg
Methylene chloride	< 5.0	ug/kg
MTBE	< 5.0	ug/kg
Styrene	< 5.0	ug/kg
1,1,2,2-Tetrachloroethane	< 5.0	ug/kg
Tetrachloroethene	< 5.0	ug/kg
Toluene	6.8	ug/kg
1,1,1-Trichloroethane	< 5.0	ug/kg
1,1,2-Trichloroethane	< 5.0	ug/kg
Trichloroethene	< 5.0	ug/kg
Vinyl Acetate	< 10.0	ug/kg
Vinyl Chloride	< 10.0	ug/kg
Xylenes (total)	< 5.0	ug/kg



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## Analytical Report

Client: LFR LEVINE-FRICKE  
Project ID: 009-07992-00 JM  
Sample Number: 46055  
Sample Description: 05-10B (7-8)  
Lab File ID: 46049-56

Date Received: 01/05/05  
Date Taken: 01/04/05  
Time Taken: 1557  
Date Reported: 01/12/05

Analyte	Result	Units	Flags
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### TPH - Modified Method 8015B

Analysis Date: 01/11/05

TPH Gasoline	< 10	mg/kg
TPH Diesel	< 10	mg/kg
TPH Oil	1,250	mg/kg
TPH Total	1,250	mg/kg

### Base-Neutral/Acid Compounds Method 3540C/8270C

Preparation Date: 01/06/05  
Analysis Date: 01/07/05

Acenaphthene	< 330	ug/kg
Acenaphthylene	< 330	ug/kg
Anthracene	< 330	ug/kg
Benzidine	< 330	ug/kg
Benzo[a]anthracene	< 330	ug/kg
Benzo[b]fluoranthene	< 330	ug/kg
Benzo[k]fluoranthene	< 330	ug/kg
Benzo[g,h,i]perylene	< 330	ug/kg
Benzo[a]pyrene	< 90	ug/kg
Benzoic Acid	< 330	ug/kg
Benzyl alcohol	< 330	ug/kg
bis(2-Chloroethoxy)methane	< 330	ug/kg
bis(2-Chloroethyl)ether	< 330	ug/kg
bis(2-chloroisopropyl)ether	< 330	ug/kg
bis(2-Ethylhexyl)phthalate	< 330	ug/kg
4-Bromophenyl-phenylether	< 330	ug/kg
Butylbenzylphthalate	< 330	ug/kg
Carbazole	< 330	ug/kg
4-Chloroaniline	< 330	ug/kg
4-Chloro-3-methylphenol	< 330	ug/kg
2-Chloronaphthalene	< 330	ug/kg
2-Chlorophenol	< 330	ug/kg
4-Chlorophenyl-phenylether	< 330	ug/kg
Chrysene	< 330	ug/kg



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## Analytical Report

Client: LFR LEVINE-FRICKE  
Project ID: 009-07992-00 JM  
Sample Number: 46055  
Sample Description: 05-10B (7-8)  
Lab File ID: 46049-56

Date Received: 01/05/05  
Date Taken: 01/04/05  
Time Taken: 1557  
Date Reported: 01/12/05

Analyte	Result	Units	Flags
Dibenz[a,h]anthracene	< 90	ug/kg	
Dibenzofuran	< 330	ug/kg	
1,2-Dichlorobenzene	< 330	ug/kg	
1,3-Dichlorobenzene	< 330	ug/kg	
1,4-Dichlorobenzene	< 330	ug/kg	
3,3'-Dichlorobenzidine	< 660	ug/kg	
2,4-Dichlorophenol	< 330	ug/kg	
Diethylphthalate	< 330	ug/kg	
2,4-Dimethylphenol	< 330	ug/kg	
Dimethylphthalate	< 330	ug/kg	
Di-n-butylphthalate	< 330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	ug/kg	
2,4-Dinitrophenol	< 1,600	ug/kg	
2,4-Dinitrotoluene	< 250	ug/kg	
2,6-Dinitrotoluene	< 260	ug/kg	
Di-n-octylphthalate	< 330	ug/kg	
Fluoranthene	< 330	ug/kg	
Fluorene	< 330	ug/kg	
Hexachlorobenzene	< 330	ug/kg	
Hexachlorobutadiene	< 330	ug/kg	
Hexachlorocyclopentadiene	< 330	ug/kg	
Hexachloroethane	< 330	ug/kg	
Indeno[1,2,3-cd]pyrene	< 330	ug/kg	
Isophorone	< 330	ug/kg	
2-Methylnaphthalene	< 330	ug/kg	
2-Methylphenol	< 330	ug/kg	
3&4-Methylphenol	< 330	ug/kg	
Naphthalene	< 330	ug/kg	
2-Nitroaniline	< 1,600	ug/kg	
3-Nitroaniline	< 1,600	ug/kg	
4-Nitroaniline	< 1,600	ug/kg	
Nitrobenzene	< 260	ug/kg	
2-Nitrophenol	< 1,600	ug/kg	
4-Nitrophenol	< 1,600	ug/kg	
N-Nitrosodimethylamine	< 330	ug/kg	
N-Nitroso-di-n-propylamine	< 330	ug/kg	
n-Nitrosodiphenylamine	< 330	ug/kg	



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46055	Date Taken:	01/04/05
Sample Description:	05-10B (7-8)	Time Taken:	1557
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Pentachlorophenol	< 330	ug/kg	
Phenanthrene	< 330	ug/kg	
Phenol	< 330	ug/kg	
Pyrene	< 330	ug/kg	
1,2,4-Trichlorobenzene	< 330	ug/kg	
2,4,5-Trichlorophenol	< 660	ug/kg	
2,4,6-Trichlorophenol	< 330	ug/kg	

### PCBs Method 3540C/8082

Preparation Date: 01/10/05  
Date Analyzed: 01/12/05

Aroclor 1016	< 80.0	ug/kg
Aroclor 1221	< 80.0	ug/kg
Aroclor 1232	< 80.0	ug/kg
Aroclor 1242	< 80.0	ug/kg
Aroclor 1248	< 80.0	ug/kg
Aroclor 1254	< 160	ug/kg
Aroclor 1260	< 160	ug/kg



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**Analytical Report**

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46055	Date Taken:	01/04/05
Sample Description:	05-10B (7-8)	Time Taken:	1557
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Date Analyzed	Method
Cyanide	<0.10	mg/kg	01/07/05	9010B/9014
Aluminum	4,220	mg/kg	01/11/05	3050B/6010B
Antimony	2.8	mg/kg	01/11/05	3050B/6010B
Arsenic	8.3	mg/kg	01/11/05	3050B/6010B
Barium	39.3	mg/kg	01/11/05	3050B/6010B
Beryllium	0.9	mg/kg	01/11/05	3050B/6010B
Cadmium	0.5	mg/kg	01/11/05	3050B/6010B
Calcium	10,700	mg/kg	01/11/05	3050B/6010B
Chromium	10.0	mg/kg	01/11/05	3050B/6010B
Cobalt	4.4	mg/kg	01/11/05	3050B/6010B
Copper	3,550	mg/kg	01/11/05	3050B/6010B
Iron	10,700	mg/kg	01/11/05	3050B/6010B
Lead	592	mg/kg	01/11/05	3050B/6010B
Magnesium	4,880	mg/kg	01/11/05	3050B/6010B
Manganese	70.8	mg/kg	01/11/05	3050B/6010B
Mercury	<0.05	mg/kg	01/07/05	7470A
Nickel	8.6	mg/kg	01/11/05	3050B/6010B
Potassium	314	mg/kg	01/11/05	3050B/6010B
Selenium	<0.2	mg/kg	01/11/05	3050B/6010B
Silver	1.2	mg/kg	01/11/05	3050B/6010B
Sodium	173	mg/kg	01/11/05	3050B/6010B
Thallium	<1.0	mg/kg	01/11/05	3050B/6010B
Vanadium	25.3	mg/kg	01/11/05	3050B/6010B
Zinc	196	mg/kg	01/11/05	3050B/6010B



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## Analytical Report

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00 JM	Date Received:	01/05/05
Sample Number:	46056	Date Taken:	01/04/05
Sample Description:	05-12B (4-6)	Time Taken:	1710
Lab File ID:	46049-56	Date Reported:	01/12/05

Analyte	Result	Units	Flags
Solids, Total	85.56	%	

### Volatile Organic Compounds Method 5035A/8260B

Analysis Date: 01/06/05

Acetone	< 10.0	ug/kg
Benzene	44.7	ug/kg
Bromodichloromethane	< 5.0	ug/kg
Bromoform	< 5.0	ug/kg
Bromomethane	< 10.0	ug/kg
2-Butanone	< 10.0	ug/kg
Carbon disulfide	< 5.0	ug/kg
Carbon tetrachloride	< 5.0	ug/kg
Chlorobenzene	< 5.0	ug/kg
Chlorodibromomethane	< 5.0	ug/kg
Chloroethane	< 10.0	ug/kg
Chloroform	< 5.0	ug/kg
Chloromethane	< 10.0	ug/kg
1,1-Dichloroethane	< 5.0	ug/kg
1,2-Dichloroethane	< 5.0	ug/kg
1,1-Dichloroethene	< 5.0	ug/kg
cis-1,2-Dichloroethene	< 5.0	ug/kg
trans-1,2-Dichloroethene	< 5.0	ug/kg
1,2-Dichloropropane	< 5.0	ug/kg
cis-1,3-Dichloropropene	< 5.0	ug/kg
trans-1,3-Dichloropropene	< 5.0	ug/kg
Ethyl benzene	82.4	ug/kg
2-Hexanone	< 10.0	ug/kg
4-Methyl-2-pentanone	< 10.0	ug/kg
Methylene chloride	< 5.0	ug/kg
MTBE	< 5.0	ug/kg
Styrene	< 5.0	ug/kg
1,1,2,2-Tetrachloroethane	< 5.0	ug/kg
Tetrachloroethene	< 5.0	ug/kg
Toluene	49.9	ug/kg
1,1,1-Trichloroethane	< 5.0	ug/kg
1,1,2-Trichloroethane	< 5.0	ug/kg
Trichloroethene	< 5.0	ug/kg
Vinyl Acetate	< 10.0	ug/kg
Vinyl Chloride	< 10.0	ug/kg
Xylenes (total)	502	ug/kg



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## Analytical Report

Client:	LFR LEVINE-FRICKE	Date Received:	01/05/05
Project ID:	009-07992-00 JM	Date Taken:	01/04/05
Sample Number:	46056	Time Taken:	1710
Sample Description:	05-12B (4-6)	Date Reported:	01/12/05
Lab File ID:	46049-56		

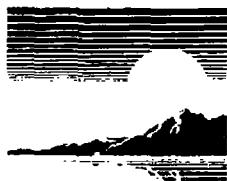
Analyte	Result	Units	Flags
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### TPH - Modified Method 8015B

Analysis Date: 01/11/05

TPH Gasoline	1450	mg/kg
TPH Diesel	< 10	mg/kg
TPH Oil	826	mg/kg
TPH Total	2280	mg/kg





**First  
Environmental  
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233  
IL ELAP / NELAC Accreditation # 100292

January 13, 2005

Ms. Wendy Krahn  
**LEVINE-FRICKE**  
630 Tollgate Road  
Suite D  
Elgin, IL 60123-9364

Project ID: 009-07992-00  
First Environmental File ID: 46151  
Date Received: January 7, 2005

Dear Ms. Krahn:

The above referenced project was analyzed as directed on the enclosed chain of custody form.

Analysis was performed in accordance with the methods found in the USEPA publication: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3<sup>rd</sup> Edition, December 1996. Specific method references are listed on the analytical report.

All analyses were performed within established holding times, and all Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met; Certification No. 000986 – 03/02/04-02/28/05. QA/QC documentation will remain on file for future reference.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William H. Mottashed  
Project Manager



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**Analytical Report**

Client:	LFR LEVINE-FRICKE		
Project ID:	009-07992-00	Date Received:	01/07/05
Sample Number:	46151	Date Taken:	01/06/05
Sample Description:	UMW-16	Time Taken:	15:20
Lab File ID:	46151	Date Reported:	01/13/05

Analyte	Result	Units	Flags
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**Volatile Organic Compounds Method 5030B/8260B**

Analysis Date: 01/10/05

Acetone	< 10.0	ug/L
Benzene	< 5.0	ug/L
Bromodichloromethane	< 1.0	ug/L
Bromoform	< 1.0	ug/L
Bromomethane	< 5.0	ug/L
2-Butanone	< 10.0	ug/L
Carbon disulfide	< 5.0	ug/L
Carbon tetrachloride	< 5.0	ug/L
Chlorobenzene	< 5.0	ug/L
Chlorodibromomethane	< 1.0	ug/L
Chloroethane	< 10.0	ug/L
Chloroform	< 1.0	ug/L
Chloromethane	< 10.0	ug/L
1,1-Dichloroethane	< 5.0	ug/L
1,2-Dichloroethane	< 5.0	ug/L
1,1-Dichloroethene	< 5.0	ug/L
cis-1,2-Dichloroethene	< 5.0	ug/L
trans-1,2-Dichloroethene	< 5.0	ug/L
1,2-Dichloropropane	< 5.0	ug/L
cis-1,3-Dichloropropene	< 1.0	ug/L
trans-1,3-Dichloropropene	< 1.0	ug/L
Ethyl benzene	< 5.0	ug/L
2-Hexanone	< 10.0	ug/L
4-Methyl-2-pentanone	< 10.0	ug/L
Methylene chloride	< 5.0	ug/L
MTBE	< 5.0	ug/L
Styrene	< 5.0	ug/L
1,1,2,2-Tetrachloroethane	< 5.0	ug/L
Tetrachloroethene	< 5.0	ug/L
Toluene	< 5.0	ug/L
1,1,1-Trichloroethane	< 5.0	ug/L
1,1,2-Trichloroethane	< 5.0	ug/L
Trichloroethene	< 5.0	ug/L
Vinyl Acetate	< 10.0	ug/L
Vinyl Chloride	< 2.0	ug/L
Xylenes (total)	< 5.0	ug/L



**CHAIN OF CUSTODY RECORD**

**First Environmental Laboratories, Inc.**  
1660 Shore Road, Suite D  
Naperville, Illinois 60563  
Phone: (630) 778-1230 • Fax: (630) 778-1233  
24 Hr. Pager (708) 569-7507  
E-mail: [info@firstenv.com](mailto:info@firstenv.com) IIEPA Certification# 100292

**First Environmental Laboratories**  
11600 Shore Road, Suite D  
Naperville, Illinois 60563  
Phone: (630) 778-1240 • Fax: (630) 778-1233  
24 Hr. Pager (708) 569-7507  
E-mail: [info@firstenv.com](mailto:info@firstenv.com)  
IEPA Certification# 100292

Company Name: LFR Levine Fricker

Street Address: 6307 Illegate Road, Seattle  
City: E/6/i- State: IL Zip: 60123  
Phone: 047-695-0855 Fax: 047-695-7791  
Send Report To: Wendy Lrah-  
Sampled By: David Karcher ref/c

Cooler Temperature: 1°C

Received within 6 hrs of collection:

Notes and Special Instructions: Standard TAT; ~~MDLs must meet IEPA Class I low ROS.~~

Relinquished By: John Date/Time 1/30/07 40 Received By: John Date/Time 1-30-1010  
Relinquished By: \_\_\_\_\_ Date/Time \_\_\_\_\_ Received By: \_\_\_\_\_ Date/Time \_\_\_\_\_